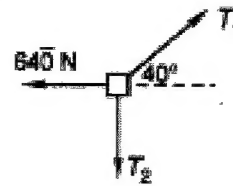


## Equilibrium III

1) Solve for  $T_1$  and  $T_2$ 

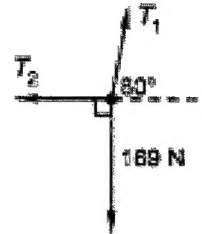
$$T_1 = \frac{640 \cos(0)}{\sin(50)} = \boxed{835.5 \text{ N}}$$

$$T_2 = \frac{640 \cos(50)}{\sin(50)} = \boxed{537 \text{ N}}$$

2) Solve for  $T_1$  and  $T_2$ 

$$T_1 = \frac{169 \cos(0)}{\sin(80)} = \boxed{171.6 \text{ N}}$$

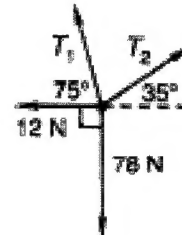
$$T_2 = \frac{169 \cos(80)}{\sin(80)} = \boxed{29.8 \text{ N}}$$

3) Solve for  $T_1$  and  $T_2$ 

~~$$T_1 = 88.7 \text{ N}$$~~
~~$$T_2 = 12.37 \text{ N}$$~~

$$T_1 = \boxed{60.7 \text{ N}}$$

$$T_2 = \boxed{33.82 \text{ N}}$$

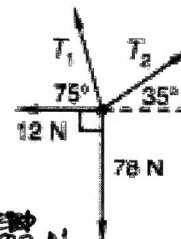
4) Solve for  $T_1$  and  $T_2$ 

$$T_1 \sin(75) + T_2 \sin(35) = 78$$

$$-T_1 \cos(75) + T_2 \cos(35) = 12$$

$$T_2 = \frac{78 - T_1 \sin(75)}{\sin(35)} = \frac{78 - \frac{\sin(75)(12 - T_2 \cos(35))}{-\cos(75)}}{\sin(35)} = 33.82 \text{ N}$$

$$T_1 = \frac{12 - T_2 \cos(35)}{-\cos(75)} = \frac{12 - \frac{\cos(35)(78 - T_1 \sin(75))}{\sin(35)}}{-\cos(75)} = 60.7 \text{ N}$$

5) Solve for  $T_1$  and  $T_2$ 

$$T_1 = \frac{W \cos(50)}{\sin(30 + 50)}$$

$$= \frac{9496.1 \cos(50)}{\sin(20)}$$

$$= \boxed{17846.8 \text{ N}}$$

$$T_2 = \frac{9496.1 \cos(-30)}{\sin(20)} = \boxed{24044.9 \text{ N}}$$

